

togeny, and phylogeny remain the three great "records of creation," which alone, by their reciprocal completion, elucidation, and agreement, can enlighten us as to the essence and origin of organic forms.

[To be continued.]

XXVIII.—*Remarks on a few Species belonging to the Family Terebridæ, and Descriptions of several new Forms in the Collection of the British Museum.* By EDGAR A. SMITH, F.Z.S., Zoological Department, British Museum.

TEREBRA BUCCINULUM, Desh., described in the 'Journal de Conchyliologie,' 1857, vol. vi. p. 92, pl. v. fig. 12, and refigured by Reeve in the 'Conchologia Iconica,' vol. xii. *Terebra*, fig. 101 *b*, is the same species of shell as that figured by the latter author, in his monograph of the genus *Bullia*, as *B. turrita*, Gray. Of this there can be no doubt, as I have before me the actual examples that are figured and cannot trace the slightest difference.

Messrs. H. & A. Adams (Gen. Rec. Moll. i. p. 114) place *turrita*, Gray, as a *Leiodomus*, Swainson (as restricted by them), a subgenus of *Pseudostrombus*, where at present it may be convenient to let it remain; for certainly this shell has more affinity to the *Bullia* group than to the Terebridæ.

Terebra aciculina, Lamk.

Messrs. Deshayes, Hinds, and Reeve (partim) refer the same shell to this name. Deshayes cites the figure 13 on plate vii. of Kiener's 'Coq. Viv.' Hinds, in his monograph in the 'Thesaurus Conchyl.' figures it on plate xlv. fig. 130 as a synonym of *cinerea*, Basterot, and Reeve, Conch. Icon. xii. figs. *d* (typical) and *a, c, f* (vars.). The latter author quotes as synonyms *anomala*, Gray, *inconstans*, Hinds, and *matheroniana*, Desh., which I believe to be as good and distinct species as any in the genus. *T. anomala*, the type of which is before me, is not the shell figured by Reeve, Conch. Icon. fig. 121, *a* & *c*. Hinds has given a very fair representation of

cited has some claim to be received. In fact, for reasons of comparative anatomy, it is not improbable that *originally* (*phyletically*!) the gastro-fibrous lamella (or gastro-muscular lamella) originated from the entoderm, and the skin-lamella (or dermo-muscular lamella) from the exoderm. The coalescence of the two originally separate muscular lamellæ in the mesoderm, such as usually appears to occur in the ontogeny of the Vertebrata, would then have to be conceived as a secondary developmental act.

it (Thes. Conch. fig. 97), which shows clearly the chief distinctive feature of the species, namely the wavy spiral sulcus or impressed line which divides the whorls a little below the suture.

T. inconstans, Hinds, *l. c.* fig. 83 (Reeve, *l. c.* fig. 121, *b*, typical, *c*, var.), is recognized, in the first place, by its shorter and broader form, then by the greater coarseness of the ribs or plications, which are produced to the base of the whorls, and lastly, but especially, by the presence of a thick callosity or plication situated on the middle of the columella, rather far within the aperture.

T. matheroniana, Desh., is a small species, of a very distinct character. The longitudinal plications are continuous to the base of the whorls; and the aperture is small and narrow, and not patulate as in *aciculina*.

Terebra pulchra, Hinds.

The type of this species, presented to the British Museum by Sir E. Belcher, on comparison with *cerithina*, Lamk., proves to be but the early stage of that form.

Subgenus nov. IMPAGES.

Testa subulata, terebræformis; anfract. integri, plus minusve longitudinaliter striati vel plicati, sutura indistincta separati; callo angusto lineam suturalem supra cincti.

The term *Leiodomus* was applied by Swainson in 1840 to some of the species composing the genus *Bullia* of Gray (1835). It is restricted by Messrs. H. & A. Adams, in their 'Genera of Recent Mollusca' (i. p. 114), to one of the species quoted by Swainson, viz. *vittata* (Linn.), and three or four others unknown to that author.

Dr. Gray, in the 'Guide to the Systematic Distribution of Mollusca in the British Museum' (p. 6), applies this name to those species of *Terebridae* which have a callous band encircling the whorls above, but contiguous to the sutural line, quoting *T. cærulescens* [var. = *nimbosa*, Hinds] as an example. The other species which possess this peculiarity are *micans*, Hinds (var. *Adansonii*, Desh.), *acuminata*, Gray, *cuspidata*, Hinds, *apicina*, Desh., *Traillii*, Desh., *bacillus*, Desh.

As I deem it advisable to leave the group *Leiodomus* as a subgenus of *Bullia*, as disposed by Messrs. Adams, I would propose to apply the subgeneric title *Impages* to the above-named species.

Terebra flava, Gray.

The specimen from which the figure of this species in the

'Thesaurus Conchyl.' pl. xliv. fig. 75 was taken is in the Cumingian collection. On comparing it with the type of *flava* in the British Museum, it proves to be a very distinct shell; and I have therefore applied to it the name *lutescens*.

Genus TEREBRA.

Terebra Adamsii.

T. testa subulata, leviter turrata, sordide albida, strigis fuscis, parvis (in anfr. singulo pluribus) sulcis transversis interruptis ornata; anfr. ultimus infra peripheriam albidam zona fusca cinctus; anfr. 19-20, plani, superne tuberculorum parvorum seriebus spiralibus duabus sulco divisis (superioribus majoribus, obliquis, cingulum infrasuturale constituentibus), cincti, et sulcis angustis 3 (in anfr. ultimo 9-10) inculpti; anfr. ultimus brevis, subquadratus; columella contorta, alba; canalis leviter recurvus.

Long. 36 mill., diam. $6\frac{3}{4}$.

Hab. Japan (*A. Adams*).

This and the other species from Japan described in the present paper were collected in the seas surrounding that country by Mr. Arthur Adams, to whom I have much pleasure in dedicating the present form.

The whorls have an infrasutural band of oblique nodules (in width occupying about one third of the whorl), which are irregularly brown and white, and also just below this a second girdle of smaller nodules, which are alternately brown and white. From these brown nodules descend little narrow streaks of the same colour, which are interrupted by the three narrow spiral sulci or striæ which are engraven around each whorl.

Terebra australis.

T. testa subulata, subturrata; anfr. convexiusculi basesque versus paululum contracti, superne sulco profundo divisi; pars superior angulata, nodulis subacutis munita; pars inferior costis validissimis, rectis, acutis (in anfr. ultimo 27-28 sensim ad basim obsoletis) instructa, haud spiraliter striata; dilute livido-fulva; costarum acies pallide, anfractusque dimidium inferius dilute fulvum; apertura intus superne fulva, inferne pallida; columella subrecta; canalis brevissimus.

Long. 55 mill., diam. $12\frac{1}{2}$; apertura long. 12 mill., diam. 5.

Hab. Swan River, and Paterson's Bay, Torres Straits, North Australia (*J. R. Elsey, Esq.*).

This is a very remarkable species, of which there are two specimens in the British Museum. The infrasutural belt,

which is angled in the middle and furnished with small sub-acute nodules, is divided off by a most well-defined deeply cut furrow, as in *T. trochlea*, Desh. The ribs which form the rest of the whorls are strong, contiguous, very regular, and acute. The general colour is a pale livid fawn, the sharp edges or angles of the ribs being whitish, and the basal half of the body-whorl of a deep cream-colour or very pale brown.

Terebra concolor.

T. testa polita, nitente, aut alba aut dilutissime cæruleo-alba, subulata, subturrita; anfr. planiusculi, sulco bene definito inæqualiter divisi; pars superior nodulis parvis, elongatis, obliquis munita; pars inferior costis parvulis, subdistantibus, erectis (in anfr. ultimo breviusculo 14-15 ad basim sensim obsoletis) instructa; columella curta, subrecta; canalis brevissimus.

Long. 22 mill., diam. 6; apertura long. 5 mill., diam. $2\frac{1}{3}$.

Hab. — ?

A whitish shining species, furnished with oblique oblong nodules on the infrasutural belt; and on the remainder of the whorls there are small, regular, upright ribs somewhat distant from each other, which gradually become stouter towards the apex.

Terebra similis.

T. testa subulata, polita, alba, subturrita; anfr. primi 8-9 angulatum convexi, cæteri planiusculi, sulco profundo inæqualiter divisi; pars superior nodulis parvis erectis, subacutis, munita; pars inferior costis subvalidis, erectis (in anfr. ultimo subelongato 14-15 fere ad basim continuis) instructa; apertura oblongo-elongata; columella subrecta, elongata; canalis brevis.

Long. 22 mill., diam. 6; apertura long. $6\frac{1}{3}$ mill., diam. $2\frac{1}{3}$.

Hab. — ?

At first sight this species is rather like *T. concolor*; however, on closer comparison, there are found to exist several good specific differences. In *T. similis* the infrasutural band is defined by a deeper furrow than in *T. concolor*; and the nodules in the former are upright and rather acute, especially those in the first seven or eight whorls, while those of the latter are oblique, not so strong, and not acute. The longitudinal ribs also of *T. similis* are considerably stouter than those in *T. concolor*; and the aperture and body-whorl of the latter are likewise much shorter than in the former.

Terebra japonica.

T. testa subulata; anfr. 17, planiusculi, albidi, inferne zona lata olivaceo-fusca (inter costas præcipue conspicua) ornati, costis longi-

tudinalibus validis, contiguis, subacutis, leviter areuatis (in anfr. ultimo circiter 15) instructi, et infra suturam linea impressa spirali inter costas inæqualiter divisi; anfr. ultimus ad peripheriam zona angusta alba ornatus, inferne fuscus; columella fusca, leviter contorta.

Long. 32 mill., diam. 7.

Hab. Japan (*A. Adams*).

The strong ribs, acute at the edges and contiguous at their bases, and the style of coloration (namely, the upper half of the whorls being white, and the lower portion olive-brown) are the most prominent features of this species. The edges of the ribs are whitish; and there is a narrow whitish band encircling the periphery of the last whorl, which is of a brown colour towards the base.

Subgen. MYURELLA.

Myurella fijiensis.

M. testa subturrita, subulata, polita, alba, anfractuum medio dilute brunneo obscure zonata; anfr. planiusculi, costis subvalidis obliquis paululum areuatis (in anfr. ultimo 13 sensim ad basim obsoletis) instructi, et transversim concinne 8- (in anfr. ultimo 16-) suleati; cingulum infra suturam inconspicuum; apertura parva; columella fere recta; canalis brevis.

Long. 21 mill., diam. 4.

Hab. Ovalau, Fiji Islands.

The chief characteristics of this species are the regularity of the spiral sulci, about eight in each whorl and double that number in the last, and the obscurity of the infrasutural spiral groove, which is only to be detected in the upper whorls, and consists of a series of elongate punctures between the longitudinal ribs. The faint brownish band around the middle of the whorls is probably somewhat faded.

Myurella turrita.

M. testa turrita, subulata, polita, albida, dilute fusco sparsim maculata; anfr. planiusculi, ad bases paululum contracti, costis longitudinalibus, crassis, aliquando obliquis et areuatis (in anfr. ultimo 19-20 fere ad basim continuis) instructi, suturamque infra inter costas punctorum serie et supra costas sulco minime profundo inæqualiter divisi, et spiraliter fortiter 4- (in anfr. ultimo 9- ad 10-) suleati; apertura brevis; columella superne recta, basi contorta.

Long. 26 mill., diam. $4\frac{1}{2}$.

Hab. Torres Straits.

Perhaps the above may not be the dimensions of a specimen

of mature growth; but the characters of the species are very distinct. The turreted appearance, the polished shining surface, the few coarse spiral sulci, and the style of the coloration very clearly define this form.

Myurella Belcheri.

M. testa subulata, dilute rubida, anfr. ultimi medio zona alba obscura cincto; anfr. convexiusculi, costis longitudinalibus, arcuatis (in anfr. ultimo 17-18 ad basim sensim obsoletis) instructi, sulcoque minime profundo suturam infra inæqualiter divisi, et sulcis 4-5 transversis (in anfr. ultimo 15-16) super costas continuis ornati; columella contorta, ad basim obliqua.

Long. 39 mill., diam. 8; apertura long. 7 mill., diam. 4.

Hab. Guayaquil, Ecuador.

This species, of which there is but one specimen in the British Museum (presented by Sir Edward Belcher), has for its nearest ally *specillata*, Hinds. It may, however, be at once known from it by the greater coarseness of the longitudinal ribs, which are cut across by the transverse sulci; this is not so conspicuous in *specillata*, which has longer whorls and a straighter columella than the present species. The coloration is also different.

Myurella Macgillivrayi.

M. testa subulata, subturrita, sordide alba; anfr. convexiusculi, costis longitudinalibus, arcuatis, tenuibus (in anfr. ultimo 18-19 sensim ad basim attenuatis) instructi, suturamque infra inter costas sulco fortiter punctato inæqualiter divisi, et spiraliter concinne sulcati; anfr. ultimus subelongatus; apertura angusta; columella fere recta; canalis brevis.

Long. 22 mill., diam. 5; apertura long. 6, diam. 2.

Hab. Bruinie Island, south coast of New Guinea, 35 fathoms, clay bottom (*J. Macgillivray, Esq., Voy. 'Rattlesnake'*).

A pretty, whitish species, furnished with slender, curved longitudinal ribs, and neatly transversely striated, the striations or furrows being finer in the last three or four whorls than in the rest; and the infrasutural belt is divided off by a spiral series of deep punctures, there being one in each interstice between the ribs.

Myurella miranda.

M. testa elongata, subacuminata, albida, cretacea; anfr. 11 convexi, costellis gracillimis numerosissimis (in anfr. ultimo 36-40) obliquis, longitudinalibus, et spiralibus (in anfr. primis 5, 2, in sequentibus 5, 5-6, in ultimo 9-10) in locis intersectionum nodulosi, concinne

cancellati; eingulum suturale ex nodulis elongatis obliquis constans, punctorum serie notatum; anfr. ultimus elongatus, subventricosus; columella subrecta, cauda biplicata.

Long. 26 mill., diam. 6; apertura long. 6 mill., diam. 3.

Hab. Malacca.

There is no species in the family with which this one can be compared as regards affinity. The beautiful cancellated surface, formed by numerous longitudinal and a few spiral lirations, which form little bead-like nodules at the points of intersection, the convexity of the whorls, the infrasutural belt formed of oblong nodules, and the peculiarity of the few upper whorls, which, being encircled by but one or two spiral ribs, have an angular outline, are characters which at once define this from all other species.

Myurella contracta.

M. testa parva, turrita, cinerea; anfr. 12, planiusculi, costis longitudinalibus validis, leviter arcuatis, obliquis (in anfr. ultimo 17-18 ad basim continuis) instructi, sulcis parvis, transversis, pluribus, profundis costas inter et levibus costas supra, ornati, et infra suturam punctorum serie inter costas inæqualiter divisi; anfr. ultimus basi contractus; apertura parva, fusca; columella obliqua, labio callo crassiusculo fusco juncta.

Long. 17 mill., diam. $3\frac{2}{3}$.

Hab. — ?

The strong ribs (made somewhat nodulous by being cut across by the numerous transverse sulci, which are rather deep in the interstices), the basal contraction of the last whorl (which is broader at the suture than inferiorly), the small brown aperture, and the callosity on the columella (which extends to the juncture of the outer lip with the body-whorl) are the chief distinguishing marks by which this peculiar shell may be recognized.

Myurella granulosa.

M. testa subulata, brunnea, infra suturam zona angusta cinerea cineta; anfr. 14-?, elongati, convexiusculi, costis obsoletis nodulosis (superne præcipue) longitudinalibus subpallidis (in anfr. ultimo 13) instructi, lirisque spiralibus 4-5 obsoletis, costarum nodulos connectentibus (infima suturæ contigua), cineti; anfr. ultimus elongatus, subventricosus; columella subrecta.

Long. 26 mill., diam. 6.

Hab. Japan (*A. Adams*).

This is a very peculiar species, quite distinct from any other belonging to the family. It is chiefly characterized by the in-

distinct ribs, which are ornamented with four or five palish nodules, the upper one being the largest, these being connected by the same number of faint spiral liræ, and also by the uniform brown colour with the narrow ashy zone below the suture. None of the few specimens from which this description is prepared appears to be quite mature.

Myurella paucistriata.

M. testa parva, subulata, subturrita, flavida, zona alba infra suturam et altera in anfr. ultimi medio cincta; anfr. 16-17, planiusculi, costis longitudinalibus validis, subacutis, superne nodosis (in anfr. ultimo 13 basim versus obsoletis) instructi, sulco parvo, inter costas præcipue conspicuo, inæqualiter divisi, et striis spiralibus 3-4 inter costas (anfr. ultimo pluribus) insculpti; columella recta, vix contorta.

Long. 19 mill., diam. 4.

Hab. Ovalau, Fiji Islands, 5 fathoms in sand (*J. Macgillivray*).

The upper half of each whorl is white, and the lower part yellowish; the body-whorl has a white zone at the periphery; the strong ribs are somewhat nodulous above, which appearance is produced by being partially cut across by a slight spiral furrow, deepest between the ribs; the spiral striæ are deep and far apart, three or four in number in the upper whorls, and about twelve in the last.

Myurella capensis.

M. testa parva, subulata, albida, zona angusta dilute fusca infra suturam, et altera ad anfractuum bases costis albidis interrupta, et anfr. ultimi basi fuscescente; anfr. 9-10, superne constricti, inferne convexiusculi, costis validis, leviter flexuosis et obliquis (in anfr. ultimo circiter 14 versus basim obsoletis) instructi, spiraliter exilissime striati, superne paululum infra suturam sulco obsoleto depressi; columella subrecta, vix contorta.

Long. 19 mill., diam. 5.

Hab. Port Elizabeth, Cape of Good Hope.

This species is chiefly remarkable on account of the brownish depression a little below the sutural line, which gives the outline of the whorls a somewhat constricted appearance in that part. The last whorl, besides the brownish depression, has a faint band of the same colour around the middle, conspicuous only between the ribs, and the base also brownish.

Myurella pumilio.

M. testa parva, subulata, sordide alba, infra suturam zona fusca, et in anfr. ultimo zonis duabus fuscis, altera supra, altera peripheriam

infra, ornata; anfr. 11, convexiusculi, costis validis, arcuatis, vix obliquis, superne subtuberculatis (in anfr. ultimo 18–20 sensim ad basim obsoletis) instructi, et transversim inter costas exilissime striati, infra suturam leviter contracti; apertura parva, zonis duabus fuscis intus ornata; columella paululum obliqua, fusca, labio callo tenui juncta.

Long. 10 mill., diam. $2\frac{1}{2}$.

Hab. — ?

A very small species, chiefly distinguished by the narrow brown band beneath the suture and the two which encircle the body-whorl. There is a slight depression at the upper part of the whorls, but scarcely forming an infrasutural belt; and the upper ends of the ribs terminate somewhat nodulously.

Myurella tantilla.

M. testa minuta, elongata, alba, zona angusta dilute brunnea suturam infra (in anfr. ultimo duabus, altera suturam infra, altera peripheriam infra) cincta; anfr. 8, convexiusculi, superne paululum constricti, costis longitudinalibus, arcuatis, validis, superne tuberculatis (in anfr. ultimo 15 fere basi continuis), instructi, transversim inter costas concinne striati; apertura parva; columella curta, subrecta; canalis brevissimus.

Long. $6\frac{1}{2}$ mill., diam. $2\frac{1}{3}$.

Hab. Japan (*A. Adams*).

This is one of the smallest, if not the most minute, species in the genus. There is a slight contraction or spiral depression a little below the suture, which, traversing the ribs near their upper extremities, produces the appearance of a series of nodules; this feature, together with the small size and the style of marking, will easily define this form.

Subgen. ABRETIA.

Abretia antarctica.

A. testa parva, breviter subulata, fusca, inter costas epidermide tenui cretaceo induta; anfr. 10, convexiusculi, nec dimidiati nec transversim striati, costis longitudinalibus, fuscis, arcuatis, obliquis, subremotis (in anfr. ultimo 13 versus medium obsoletis) instructi, incrementique lineis striati; apertura parva, fusca; columella brevis, subrecta.

Long. 14 mill., diam. $4\frac{1}{3}$.

Hab. Antarctic region.

This species, of which there are six examples in the Museum, was obtained during one of the Antarctic expeditions. The precise locality is not attached to them; but they have that peculiarity (a dull ashy or chalky aspect) which is so usual in shells from those freezing latitudes.

The absence of all spiral sculpture, and the strong, arcuate, oblique plications or ribs are the chief points of distinction.

Abretia brasiliensis.

A. testa parva, elongata, polita, saturate castanea, infra suturam zona angusta flava ornata; anfr. 10, primi 2 subglobulares, cæteri plani, plicis longitudinalibus superne tuberculis flavidis terminatis, (in anfr. ultimis duobus 15, inferne obsoletis) instructi, haud spiraliter striati; anfr. ultimus brevis, subquadratus; apertura parva, fusca; columella brevissima.

Var. omnino flavida.

Long. 11 mill., diam. 3.

Hab. Botafogo Bay, Rio de Janeiro (3 fathoms, sandy mud). Collected by J. Macgillivray, Esq., during the voyage of the 'Rattlesnake.'

A very distinct species, at once recognized by the smallness of its size, the deep chestnut colour, with the yellow band below the suture, which tints the nodulous ends of the longitudinal ribs, and the shortness of the aperture and columella. There is no spiral furrow or depression below the suture.

XXIX.—On the French Species of the Genus *Geomalacus*. By D. F. HEYNEMANN, President of the German Malacozoological Society, Frankfort-on-Maine.

THROUGH Mr. T. A. Verkrüzen of London I received a small parcel of living *Geomalacus maculosus*, Allman, from Ireland; and having carefully examined these, I am now enabled critically to investigate the statement of several French authors that this genus not only occurs in France, but is there represented by various species.

English authors started an hypothesis that the animals, with the plants they live amongst (and which are only met with in the south-west of Ireland), were of Asturian or Spanish origin.

Although it had not been proved that *Geomalacus* does occur on the Pyrenean peninsula until Lucas von Heyden found one specimen in the Asturias, during his entomological journey in Spain in 1868, and forwarded it to Germany, the above hypothesis of British authors was nevertheless adopted in 1867 by the French malacologists Bourguignat and Mabille; and they even went to the length of taking as an established fact what had been proposed as a supposition only.

Geomalacus having thus been once established as of Spanish origin, its distribution must, according to the ideas of these authors, have taken place by way of France only. All at